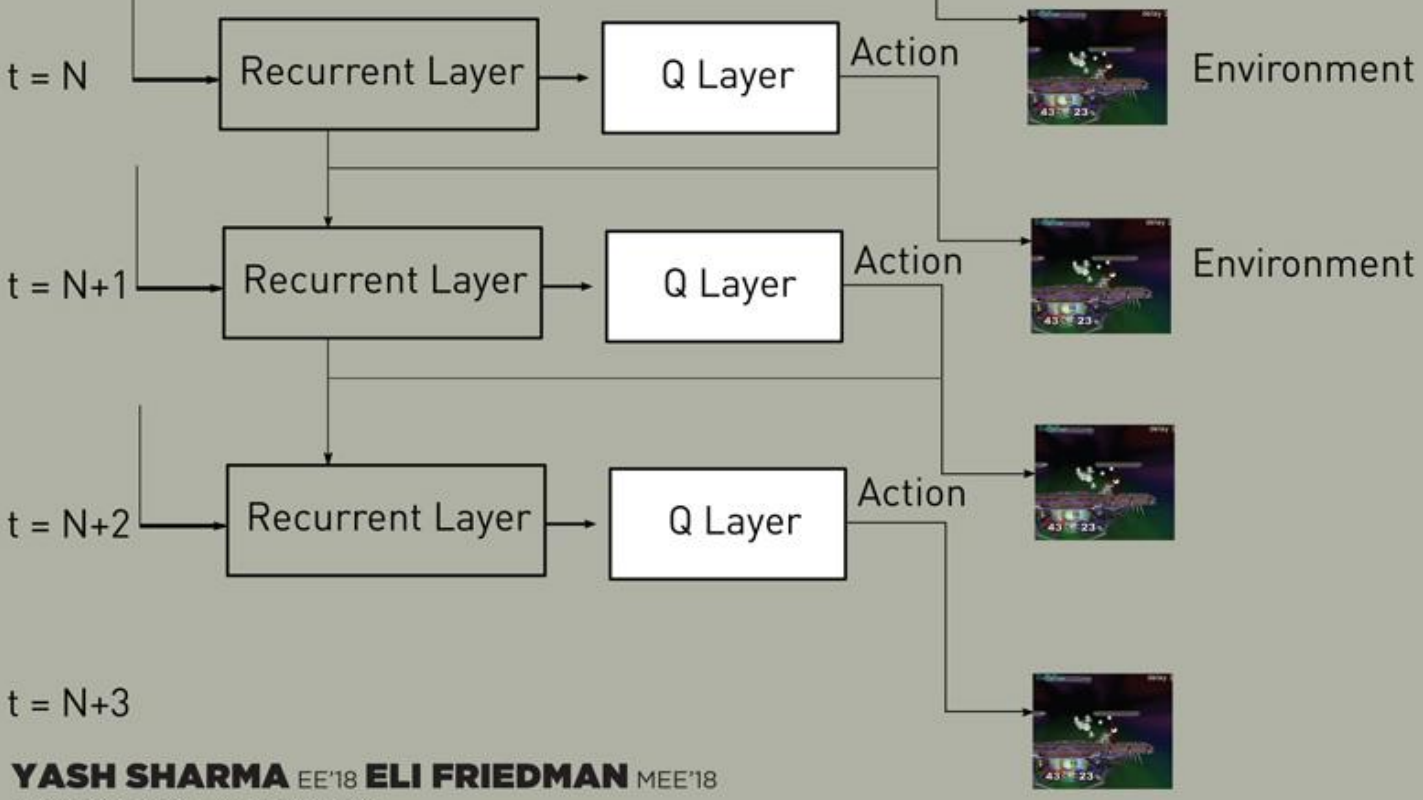
SUPER SMASH BROS. *MELEE* AI—MAKING IT MORE HUMAN



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We used recurrent neural networks to teach a computer to play Super Smash Bros. *Melee* in a more human-like way. Previously, neural network agents have been taught to play Super Smash Bros. on a competitive level with humans [1], but they were "too good"—unrealistically so. The computers could react much faster than a human ever could. However, when these agents were given human-like reaction speeds, they performed much worse than humans. We solved this problem by adding a recurrent layer to the architecture so that the computer could "remember" what it saw a few frames ago and act appropriately even though its actions were delayed. We compared two reinforcement learning algorithms for training the agents—Recurrent Q-learning and Recurrent Actor Critics, and found that Recurrent Q-learning was able to achieve the best performance against the built-in CPU and against humans.

[1] V. Firoiu, W.F. Whitney, and J.B. Tenenbaum. Beating the World's Best at Super Smash Bros. *Melee* with Deep Reinforcement